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ART. I.—AN ESSAY ON SCAMMONY, WITH AN EXAMINATION INTO THE QUALITIES OF THE DRUG FOUND IN THE MARKET,

*Read before the College of Pharmacy, December 6th, 1847.*

By JOSEPH CARSON, M. D., &c.

THE subject of scammony at the present time is a deeply interesting one. As one of the oldest articles of the *Materia Medica*, it commands attention. Its history is curious, and the value which is found attached to it in the earlier records of medicine, prompts to the investigation of its present claims to regard and confidence. It is generally understood that the drug is of doubtful character, but few are aware that there is so great a reduction of its value, so great a dissimilarity of its physical and sensible properties, and so extensive a misconception of the true qualities which pertain to it. What is written in the works on Pharmacology may be familiar to those who investigate such subjects, but until the difficulty of procuring even tolerable specimens of the article is encountered, they can not be forcibly impressed with the remark of Dr. Christison, "that scarcely any of the descriptions in systematic books, especially in the English language, convey a correct idea of the scammonies of the present day, at least of those to be met with

in the British market;" which circumstance he further states, "can only be accounted for by supposing that authors have copied one from another, for some considerable time, instead of examining the commercial varieties of the drug for themselves." The application of these statements to this country is equally pertinent, and the present communication has been prepared, that the attention of this College may be directed to the topic, in which its members are deeply concerned. In preparing the essay, it has been thought, that it would be more satisfactory to treat of the subject as a whole, than merely to present the facts which some research has elicited; that while the existing state of things is exhibited, prominent points of comparison may be afforded, and the whole truth if possible arrived at. In so doing, the proper credit will be awarded to those writers who have assisted the undertaking.

The first writer on scammony, in whose treatise any attempt at description is met with, is Dioscorides. He was a native of Cilicia in Asia Minor, and lived during the second century; he wrote in Greek, and his book has been much an object of comment. The description of the plant is defective, but yet so given as to apply to the species which has since been recognized as the true one, the *Convolvulus scammonia* of Linnæus, Sp. Pl. 218. It was called *Scammonea syriaca* by Bauhin, Pin. 294, by Ray, Hist. 722; and *Convolvulus syriacus* by Morrison Hist. and by Tournefort. *Syrian Bind-weed*, was the common term applied to it. Sibthorp in his *Flora Græca*, has introduced the species of Linnæus by its name *C. scammonia*, and says, "that from this species Aleppo-scammony is prepared." He met with it at Rhodes, but he has thrown a doubt over the question of identity, with respect to this species and that of Dioscorides, and supposes that the latter was the *C. farinosus*. In treating this subject, Professor Lindley remarks, "upon what ground Dr. Sibthorp referred the scammony of Dioscorides to *Convolvulus farino-*

*sus* of Linn., a Maderia plant with slender roots, and no appreciable quantity of resin, cannot now be ascertained, for there is no specimen of *C. farinosus* in his herbarium." Professor Lindley has further shown, that if the reading of the Aldine edition of Dioscorides, of 1499, be taken, in which the Greek word for *thick* instead of that for *hairy* is employed, as applied to the branches, the description agrees with the modern plant.

Matthioli, the chief commentator upon Dioscorides, in his Latin translation, renders the description in the same manner. Upon consulting the edition of his work published by Bauhin, at Basil in 1598, it does not appear that any doubt existed with respect to the plant described by Dioscorides, and that which was placed at the disposal of the translator, by the Imperial Ambassador at Turkey, (Seigneur Angerius de Busbecke,) from the court of the Emperor Ferdinand. Of the plant thus procured he has given an excellent figure, which corresponds with those since published by Woodville and Nees von Esenbeck. This is the *C. syriacus* of Morrison cultivated in England, by Collinson.

The locality to which Dioscorides referred the best scammony was Mysia, a portion of Asia Minor, near the Pontus Euxinus, and he states that this is preferable to that of Syria and Judea. Matthioli has stated, that in his day it was brought from Alexandria and Syria by way of Venice. Tournefort (*Voyage into the Levant*) met with the drug at Samos, and stated that the plant shown to him corresponded to the description of Dioscorides; he says the same of the Syrian plant. Belon met with the plant at Candia, which he says grew wild on the mountains; (ed. 1553, *Travels*.) M. Hasselquist, a Dutch naturalist, more recently has said that the best comes from Marach, (where resides a Pacha,) four days' journey from Aleppo, near the frontiers of Armenia, and that he has seen the convolvulus in the valleys between Nazareth and Mount Carmel. Finally,



Captain D'Urville met with the plant at Cos. It is evident then that the plant is not confined to any one locality, but has extended and now extends through the Levant, which is an additional reason for assuming that the present plant and that of the ancients are the same. There appears, indeed, to have been no dissent, except in the case of Dr. Sibthorp.

In tracing the history of the drug, the fact is apparent that the estimation of the quality of it, as produced in different places, has undergone revolution; thus Dioscorides eulogizes the Mysian scammony, stating that it is bright, clear, clean, ash coloured, spongy and porous, while that from Syria and Judea is the worst of all, as it is massive, weighty and sophisticated with tithemalus, (*Euphorbia*) and fecula of the orobus (*lentil*.) Tournefort wonders that it should have been preferred to that of Judea, which is the same as that of Syria. Matthioli, as we have stated, indicated the source as Alexandria and Syria. As a consequence, the trade in it assumed new directions, and new locations became prominent, from which have been derived specific appellations. Upon Aleppo, as a depot, the article was concentrated, which was of the best kind, and hence the designation *Aleppo Scammony*. According to Hasselquist, it was brought there in small sacks. The appellation of Smyrnascammony, according to Tournefort, originated in the circumstance that the product of Natolia was carried to Smyrna.\*

But other causes have been operative in changing the course of supply; thus St. Jean D'Acre was once a port of exit, but it was abandoned, as the Arabs plundered the caravans on their way to it from the neighbourhood of Mt. Carmel. St. Jean d'Acre is mentioned as one of the ports of shipment by Pomet, (ed. 1695.) The distinction between Aleppo and

\* From the close proximity of Smyrna to the ancient province of Mysia, it would appear that the same locality has always produced the article, especially if, as Tournefort remarks, Natolia, which includes a portion of Mysia, furnished the Smyrna kind.

Smyrna scammony was made in commerce for at least a century and a half, it has but recently been abandoned, for reasons to be stated directly. When the *Dictionnaire Universel des Drogues Simples* of Lemery, of 1733, was published, the distinction between them was well established. This author has stated that the first is preferable to the second, and is "clean, light, tender, friable, resinous, grey, easily reduced to an ash-grey powder, of a stale, disagreeable odour, and a taste a little bitter;" the latter is "more close or compact, heavier, blacker, less resinous, breaking with difficulty, less grey in powder, and whitening less the liquor in which it is dissolved." It is evident from the perusal of the description given by Lemery, of the Aleppo kind, and a comparison of it with that presently to be presented of *Virgin scammony*, that the same substance is referred to. The writers of drugs of nearly the same date, (the middle of the eighteenth century) as Tournefort, Lewis and Pomet, describe the article in the same terms, and contrast it with Smyrna scammony. In the course of time, the application of the name Aleppo was made to an article of infinitely inferior quality, fabricated from the pure drug, and sufficiently differing from Smyrna to maintain the impression that it was genuine.

The question now arises, why was there a difference between the two varieties just noticed? It is agreed by all authorities from Dioscorides of ancient date, to Russel in modern times, that the best, the purest product, is the result of natural exudation from the root of the plant; the description given by these writers with an interval of sixteen centuries closely correspond. Mesue, the younger, who flourished during the tenth century, an Arabian, and consequently well instructed, informs us, however, that this was not the only method, three others being mentioned, viz., by heating the root, by bruising it and compressing the juices, and by performing the same operation on the

leaves and stems. An inferior article will be thus produced. We are forced then to admit this explanation, or to assume one, which Lindley states he doubts, to wit, that the Smyrna article was the product of a different plant, (*Periploca secamone*,) this, exclusive of other reasons, (as the article has disappeared, and given place to factitious preparations,) is hardly tenable.

It has been stated that the distinction between Aleppo and Smyrna scammony has been of late years abandoned. This has been occasioned by investigations in which the English pharmacologists more particularly have been successful, and which have resulted in the disclosure of practices which most probably had long existed, but to which attention had not been directed. Smyrna is the port of shipment; to this place the pure scammony is taken in a soft state, and there fabricated to suit purchasers, according to a tariff of prices. The individuals are called scammony makers, and, as I have been informed by an intelligent dealer,\* prepare a mixture of impurities, with which the scammony is commingled. As this stands, the mixture assumes the form of strata of various strengths, the greater levity of the scammony keeping it towards the top, while the heavier impurities settle to the bottom. From such preparation, the several qualities of the article are skimmed and formed by evaporation; hence, the terms first, second and third sorts. *Virgin scammony* and these sorts constitute the article of commerce. The admixture of foreign substances was an old practice, for Dioscorides, in preferring the Mysian article to those of Syria and Judea, states as a reason that the latter were adulterated with tithemalus and the farina of the orobus.

*Virgin scammony* in this market is at present comparatively unknown; formerly, from the statements of the older druggists, it was common; let us then exhibit its qualities and value. The name *Virgin*, is that

\* A gentleman of Boston.



employed by Pereira, Christison, and Royle; it is called *Scammonée d'Alep supérieure*, by Guibourt, and simply *Scammonée d'Alep*, by Fee. The following are the characteristics: Fragments irregular, apparently portions of larger masses; rough, worn, and ash-coloured externally, or as if covered with a greyish powder; friable, breaking between the fingers, or with the nail; fracture resinous, presenting shining greenish black surfaces, with here and there small cavities and greyish crevices; the thin fragments semi-transparent. Structure compact and light; becoming whitish by the application of moisture and friction, or in the mouth; having a peculiar taste like cooked butter, without bitterness, but a little acidity slowly developed, the odour being disagreeable, cheese-like, sp. gr. 1.2. The exterior coat effervesces with muriated acid, probably from the mass having, when soft, been rolled in chalk; there is no reaction with iodine, and it takes fire readily, burning with a yellow flame. Dr. Christison states that this kind is almost all soluble in boiling rectified spirits; and sulphuric ether takes up at least 77 per cent., indeed 82 or 83 per cent. if the specimen be tolerably dry. It breaks down readily in water, forming a smooth but not permanent emulsion. Several analyses have been made; those of the eminent Edinburgh pharmacologist are particularly worthy of notice. We shall give such as are important.

*Christison.*

	1. Old Scammony.	2. Old Scammony.
Resin, . . .	81.8	83.0
Gum, . . .	6.0	8.0
Starch, . . .	1.0	0.0
Fibre and sand, . .	3.5	3.2
Water, . . .	7.7	7.2
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	100.00 grs.	101.4
Gain probably in water,		1.4
		<hr/>
		100.00

<i>Guibourt.</i>			
Resin,	.	.	75.
Alcoholic ext.	.	.	6.25
Gum ext.	.	.	3.12
Insoluble vegetable matter,	.	.	7.25
Earths,	.	.	8.38
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			100

Marquat's analysis is more minute and elaborate; it may be consulted in Pereria's *Materia Medica*. It may be stated that one specimen gave him 81.25 of resin, another 78.5, corresponding, the first, nearly to Christison, the second to Guibourt.

*Virgin Scammony.* Two specimens have come under my observation.

*The first* corresponds to the description given of virgin scammony. Its sp. grav. is 1.3. From it were obtained:

Resin,	.	.	.	70.00
Aqueous extract,	.	.	.	3.75
Earthy matter,	.	.	.	5.00
Veg. mat. destructible	.	.	.	20.00
Loss,	.	.	.	1.25
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				100.00

The residuum from alcohol was of a greenish-brown colour, the residuum from water had nearly the same appearance; both were pulverulent. The resin was of a dirty greenish-brown colour. It affords slight effervescence with muriatic acid, and does not change with iodine. This specimen was imported from London.

*The second* is more covered with ash-coloured powder, and in mass has a duller aspect. Sp. gr. 1.3. From it were obtained:



Resin,	.	.	.	65.00
Aq. ext.	.	.	.	4.00
Earthy matter,	.	.	.	4.25
Veg. matter, destructible,	.	.	.	23.50
Loss,	.	.	.	3.25

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 100.00

It slightly effervesces with muriatic acid, and changes decidedly to blue with iodine. The alcoholic residuum had a brown ash colour; was disposed to cake when dried in the capsule. When exhausted by water, it presented a lighter colour and was pulverulent.

The *resin* was transparent, and of a brown colour. The dried *aqueous extract* was of a deep, clear brown colour, in powder glistening; entirely soluble and without taste.

The specimen was obtained from New York.

It is evident from the result of these experiments, that the two specimens examined, are inferior to those of Christison or Guibourt. The second specimen corresponds to the "*second scammony in amorphous*" pieces of Pereira.

*Scammony in large regular masses. (Factitious.)*

*Chalky and Amylaceous.*

The *first* specimen of the kind is in plano-convex cakes, four inches in diameter, an inch and a quarter thick, corrugated on the surface, between the corrugations smooth. It breaks with more difficulty than the preceding, but is brittle. The fractured surface has a deep greenish (olive) gray appearance, somewhat resinous; masses of resin appearing in detached patches; the exposed surface becoming uniformly darker. It is somewhat porous, the pores minute, with here and there shining points or cavities. In mass it gives the idea of sap sago cheese. No translucency of the edges. The powder is green ash coloured. Odour of cheese

marked. Taste marked and disagreeable. It cakes in the mouth and forms a slight emulsion. When rubbed with the moistened finger, affords some milkiness. It contains

Resin, . . . . .	40.50
Aqueous Extract, . . . . .	9.00
Earthy Matter, . . . . .	6.00
Vegetable Matter, . . . . .	32.00
Loss, . . . . .	12.50

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100.00

It slightly effervesces with muriatic acid, (chalk) and is deeply turned blue by iodine, (starch.)

The specimen was imported in 1836. It corresponds, I think, with "*β. Second Scammony*" of Pereira. At present I can find none of it in the market.

It is the article described at page 643, U. S. Dispensatory, ed., 1846.

*The second* specimen, in form, resembled the preceding; it is in plano-convex cakes, five to six inches in diameter, and in thickness, one and a quarter to one and a half inches. The exterior is rough and dirty ash brown; the fractured surface is dull, but in a clear light presents very minute shining particles; it is greenish brown, presenting white chalky points, and pores. The consistence is firm, a little force being necessary to reduce it to powder; powder, ash brown, rather than green. It has a cheesy odour; a disagreeable taste, and forms an emulsion in the mouth; it is somewhat gritty between the teeth. It contains

Resin, . . . . .	45.00
Aqueous ext. (gum.) . . . . .	7.50
Earthy matter, . . . . .	12.50
Veg. matter, destructible, . . . . .	30.00
Loss, . . . . .	5.00

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100.00

It effervesces briskly with muriatic acid, and is turned

blue by iodine. The inference is therefore that the earthy matter is chalk, and the vegetable matter starch. Of this kind I have found two small lots in the market, the remnants of those imported several years since. It corresponds to the "third quality" scammony of Pereira, but yet is as good as the preceding.

*The third specimen* I have is in masses, six inches long, four wide, and one and a half thick, rounded at the extremities; plano-convex, and divided into two parts on the convex surface by a deep fissure, running the length of the cake. Externally it is rough looking, of an ash white and slate appearance; internally it presents a speckled, deep ash hue; no resinous aspect on fracture. It is porous, friable, and readily reduced to powder; powder light ash. It has a slight cheesy odour and a chalky taste.

It is too dry to produce an emulsion by rubbing with the moistened finger. It contains

Resin,	.	.	.	.	27.00
Aqueous ext.,	.	.	.	.	5.00
Earthy matter,	.	.	.	.	6.25
Veg. mat., destructible,	.	.	.	.	58.75
Loss,	.	.	.	.	3.00
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					100.00

It effervesces briskly with muriatic acid, and is turned blue with tinct. iodine. This article came from New York.\*

#### *Amylaceous Scammony.*

This scammony is in eliptiform masses, five or six inches in length, and four inches wide, and an inch thick; like the preceding, it is flat on one side, convex on the other, and divided on the convex surface by a deep depression running the length of the mass, and extending half through its thickness. The edges are uniformly rounded. It is of a

\* Since this paper was written I have seen a specimen of the same variety in small round plano-convex cakes.



light ash colour, as if rubbed on one surface; dark slate, slightly polished on the other. It breaks with a short fracture, presenting a pretty uniform surface, darker towards the edge or outer portion, and uniformly light slate coloured in the centre. Its structure is homogeneous and dense, with few and very minute elongated pores. A few white points are perceptible on minute examination, and here and there exceedingly minute shining particles. It breaks down like starch that has been wet and dried, affording a uniform ash powder. It has a rancid cheese-like odour, and a nauseous rancid, somewhat bitter taste. It contains

Resin, . . . . .	22.
Aq. ext. . . . .	7.00
Earthy matter, . . . .	2.50
Veg. mat., destructible, .	60.00
Loss and water, . . . .	8.50
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	100.00

It produces a deep blue with iodine, and effervesces with muriatic acid. This specimen was derived from New York.

*Gummy Scammony.*

In cakes or masses doubly convex, six inches wide and one and a half inches thick, polished and dark brown externally, internally greyish brown, hard, horny, homogeneous, with great difficulty broken, fracture rough, edge of fracture semi-transparent, odour decided, somewhat gritty to the teeth, gummy to the taste, rendering the saliva viscid but not opaque, shining and sticky when moistened; when rubbed with the finger giving a tenacious mucilage, dirty but not milky; powder dirty gray; with great difficulty reduced to powder. It contains

Resin, . . . . .	13.00
Aq. ext. . . . .	35.00 grs.
Earthy matter, . . . .	10.00
Veg. matter, destructible, .	37.50
Loss, . . . . .	4.50
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	100.00

The constituent of which the greater part of this is made, is soluble and insoluble gum, which I presume to be gum tragacanth from its behaviour with water. It slightly effervesces with muriatic acid, and is changed to a brown with a slight tinge of blue by iodine. This specimen was obtained from Boston. Considerable quantities are in the market.

Another specimen in similar sized and shaped masses, presents a rough earthy surface; it is lighter coloured internally than the preceding, and breaks with a horny rough fracture. It has a decided odour, is mucilaginous and bitter to the taste, somewhat gritty to the teeth, and forms with moisture on the finger a viscid clear mucilage. With water it dissolves, becoming a gruel-like viscid substance.

It contains—Resin, 6.00. The remainder as above. This article is offered as prime scammony, and I have seen it in several forms and in quantity in the market.

*Black Gummy Scammony.*

The specimens I have examined of this kind had the form of the preceding; externally they are of a plumbago colour, internally iron grey. They are heavy, hard, difficult to reduce to powder, which is dark. Odour slight, and taste viscid and gritty. From one of the specimens I obtained ten per cent. of resin. The residue seemed to be made up of tragacanth and bone black, the latter substance existing in patches unmixed in a second specimen. This scammony is in the market in large quantities.

*Factitious Smyrna Scammony.*

Two specimens of this I have met with. It corresponds to the description given of it by Pereira. "It is blackish and has externally a slaty appearance. It breaks with difficulty, its fracture is dull and black. Its sp. gr. 1.412. Moistened and rubbed it evolves the smell of guaiacum. Boiled with water it yields a turbid liquor, (which is not rendered blue by iodine,) and deposits a black powder; the

latter boiled with alcohol, yields a solution which becomes greenish blue on the addition of nitric acid, showing the presence of guaiacum." The specimens I have met with are in half cakes.

*Montpelier Scammony.*

This article is common in this market. It is well described at page 645 of the U. S. Dispensatory, ed. 1846.

Upon reviewing our investigations, it will be found that the same range of varieties has been exhibited as that presented by Christison, but there is a marked inferiority even with the best of them, as compared with his specimens. The kind chiefly composed of gum, is new so far as I have met with any account of it, and as it is plentiful, indeed the most common in our market, druggists should be on the alert to reject it.

There are certain properties which have been depended on in judging of the quality of scammony, these are the odour and taste, and the kind of solution which is produced by wetting and rubbing it. The odour is as decidedly cheesy and disagreeable in the worst specimens as the best, if not more so, and the taste is mucilaginous and nauseous, so much so, as to induce the belief that they are produced artificially ; and with respect to the milky solution, it must be apparent, that a mixture containing gummy compounds will undergo the same change by the operation usually practised. In fact there is no mode of determining the value of the adulterated article, except by the examination of its constituents.

In concluding the subject it may be remarked, that unless some decided stand is taken by the consumers of this drug, it would be as well to abandon it. The article is worthless as it exists in the market, serving to contaminate the preparations into which it enters, rather than afford to



them an increase of efficacy. The pure drug has in ancient times been called, to distinguish it, "the purgative," and more recently "one of the pillars of physic," titles which in our day and our own city, may properly be changed to *the opprobrium of pharmacy*.

